Int J Clin Exp Med 2015;8(11):21173-21179
www.ijcem.com /ISSN:1940-5901/IJCEM0012777

Original Article

Functional exercise in combination with auricular plaster therapy is more conducive to rehabilitation of menopausal women patients with anxiety disorder

Yubin Han[1], Fugui Duan[2], Rongmei Xu[3], Yi Wang[1], Hongyu Zhang[3]

[1]The Lab of Human Body Science, Henan Polytechnic University, Jiaozuo 454000, Henan Province, China; [2]Jiaozuo Teachers College, Jiaozuo 454000, Henan Province, China; [3]The Center of Physical Health, Henan Polytechnic University, Jiaozuo 454000, Henan Province, China

Received July 12, 2015; Accepted October 28, 2015; Epub November 15, 2015; Published November 30, 2015

Abstract: Objective: Observe the effect of functional exercise in combination with auricular plaster therapy on menopausal women patients with anxiety disorder. Method: Select 45 menopausal women patients with anxiety disorder and then adopt random digital table to divide them into a functional exercise group, an auricular plaster therapy group and a combination group. Each group consists of 15 patients. The patients in the functional exercise group do yoga exercise twice a day; those in the auricular plaster therapy group are provided with the auricular plaster therapy twice a day; those in the combination group do yoga exercise and then they are provided with the auricular plaster therapy twice a day. Before the treatment and after 12 weeks' treatment, respectively detect and compare the selected patients in the three groups in respect HAMA score, physical function score and mental function score; And the cured patients are followed up for 3 months to compare recurrence rate of each group. Results: After 12 weeks' treatment, HAMA score, physical function score and mental function score of the combination group are obviously better than those of another two groups ($P<0.05$); Of the cure rate and the recurrence rate within 3 months, the cure rate of the combination group is higher and the recurrence rate is low. Conclusion: Through the functional rehabilitation exercise in combination with the auricular plaster, the combined curative effect is obviously better than that of single treatment and the clinical recurrence rate is significantly lower than that of single treatment. It shows that the combined treatment method presents obvious synergistic effect and the synergistic treatment is more beneficial to improve the curative effect.

Keywords: Functional exercise, auricular plaster, combination, anxiety disorder, curative effect

Introduction

Menopause anxiety disorder is a common disease at the menopause stage. Patients fall into an anxiety status when facing their daily life and work. In the psychological aspect, they show emotional tension, restlessness, irritability, anxiety, paranoia and temper irritability symptoms, which greatly impact on normal life, work and physical and mental health of patients [1, 2]. For example, 45 years old woman slowly steps in the menopause and the menopausal patients' mood is generally more anxiety and irritability. If such mood is not attached importance, some of patients even may commit suicide. Therefore, as for women with menopausal anxiety disorder, more attention should be paid to their emotions and conditioning and patients with the obvious or severe symptoms should be timely intervened. At present, most of traditional therapies focus on psychological counseling and oral drug treatment, however, if the anxiety disorder is treated by the drug, the disadvantages are shown, such as the strong side effect, slow efficacy and addiction, even more, some patients will generate greater psychological pressure caused by oral administration of drugs, thus it affects the therapeutic effect [3, 4]. In the study, of menopausal patients with anxiety disorder, it adopts functional exercise in combination with auricular plaster to regulate their physical and mental health status. After 12 weeks' combination treatment, it is found that the treatment method has obvious effect. It is reported as follows now.

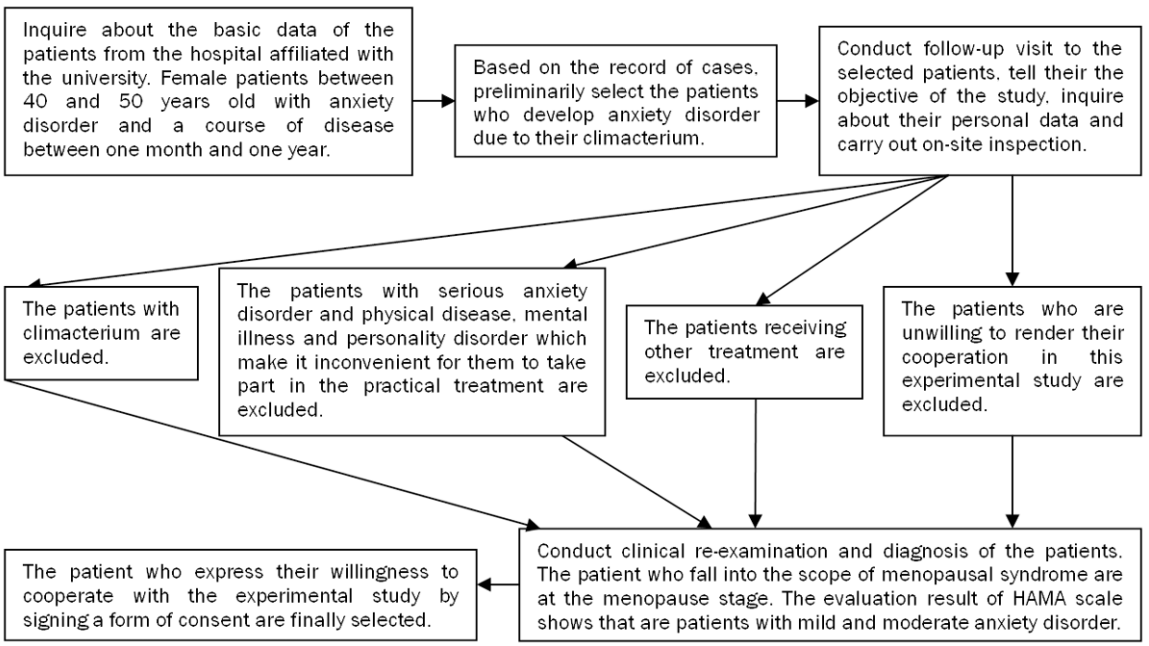

Figure 1. Flow chart for case selections.

Table 1. Comparison of general information for 3 groups of the patients before treatment ($\bar{x}\pm s$)

Group	Case number	Height (cm)	Body weight (kg)	Age	Disease course (month)
Functional exercise	15	159.37±3.56	57.40±3.12	47.50±3.84	6.37±4.39
Auricular plaster	15	160.24±4.08	58.29±3.55	48.82±3.45	7.02±3.96
Combination	15	159.62±3.55	58.13±2.96	48.16±4.05	6.59±4.40

Note: P>0.05 in the inter-group comparison.

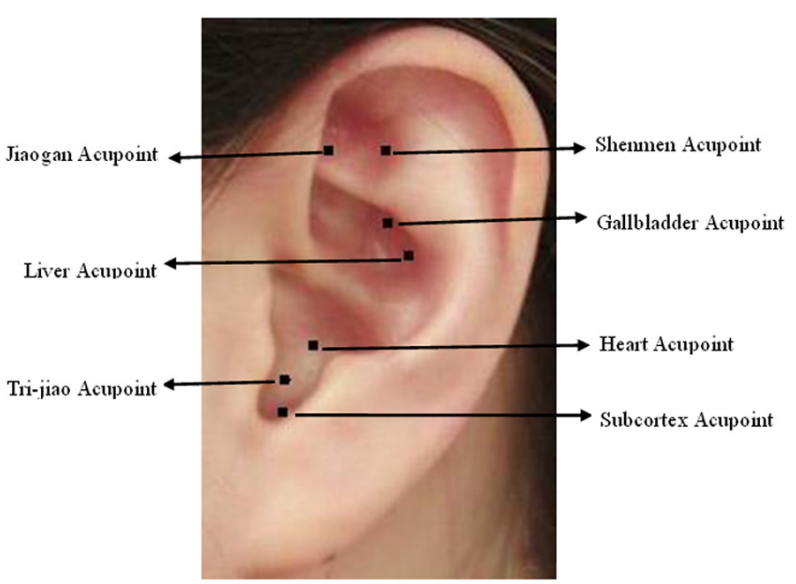

Figure 2. Note: it is considered in the traditional Chinese medicine that twelve meridians of the human body are connected to the ear. The ear is closely related to the body organs. The internal organs have the corresponding reaction zones in the auricle. The ear acupoints are the reaction points distributed in the reaction zones. When internal organs of the human body or the body suffers from the diseases, the corresponding ear acupoints (reaction points) often present some reactions, such as tenderness, nodule, discoloration and conductivity, etc. By stimulating the auricular point, there will be exercise modulating effect on the corresponding viscera to some extent. By pressing the seven ear positions in the study figure, it will regulate Qi and Blood of the body, relieve Qi stagnation and calm the heart and tranquilize the mind.

Materials and methods

Study data

The first hand data of the patients are obtained from the affiliated hospital of the school. Select 45 female

Table 2. Comparison among the three groups before and after their treatment in terms of evaluation of their HAMA, physical functions and mental functions ($\bar{x}\pm s$)

Group	Case number	HAMA evaluation (score)		Physical function evaluation (score)		Mental function evaluation (score)	
		Pre-treatment	After treatment	Pre-treatment	After treatment	Pre-treatment	After treatment
Functional exercise	15	19.72±4.37	14.36±3.85[a]	61.29±5.78	69.77±5.46[a]	63.72±5.97	69.50±6.21[a]
Auricular plaster	15	20.34±4.66	15.19±3.99[a]	60.57±6.30	62.33±6.47	63.11±6.64	68.92±6.57[a]
Combination	15	19.95±5.02	12.20±4.11[a,b,c]	60.70±5.99	74.91±5.87[a,b,c]	63.50±6.28	74.81±6.49[a,b,c]

Note: In the internal group comparison before and after treatment, [a]P<0.05; after the treatment, comparing the combination group with the functional exercise group, [b]P<0.05 and comparing the auricular plaster group with the combination group, [c]P<0.05.

Table 3. Comparison of cure rate and reoccurrence rate for 3 groups of the patients after treatment

Group	Case number	Cure rate after 12 weeks		Reoccurrence rate within 3 months	
		Cure (case)	Reoccurrence rate (%)	Reoccurrence (case)	Reoccurrence rate (%)
Functional exercise	15	5	33.33	2	40.00
Auricular plaster	15	4	26.67	2	50.50
Combination	15	8	53.33[a,c]	2	25.00[b,d]

Note: Comparing the combination group with the functional exercise group, the cure rate, [a]P<0.05, the reoccurrence rate, [b]P<0.05; Comparing the auricular plaster group with the combination group, the cure rate, [c]P<0.05, the reoccurrence rate, [d]P<0.05.

menopausal patients with anxiety disorder, whose age is 40-55 years old (**Figure 1**).

The patients are randomly divided into a functional exercise group, an auricular plaster group and a combination group. Each group consists of 15 patients. Upon the compliance test of the basic data for the three groups of patients, it is found that the inter-group difference shows no statistical significance (P>0.05) and it is comparable. See **Table 1**.

Treatment method

Functional exercise group: Select yoga exercise that focuses on the body stretching and meditation for functional rehabilitation exercise. Exercise contents and methods are as follows: ① Select a beautiful environment in which it is quiet, clean, air circulation and fresh, with broad horizon and play soft and soothing music as the background sound, then provide relaxed feeling and thinking and guide meditation from the aspects of visual, hearing and sense. ② Under the guidance of the professional yoga instructor, spring and winter parts in DVD discs attached to Life Yoga written by Lin Ming are used as the exercise contents. In the exercise process, focus on meditation and breathing. The patients do such exercise for 30 minutes once in every morning and evening and a total of 12 weeks' practice and treatment is required.

Auricular plaster therapy group: Use a probe to select the sensitive points of the following acupoints, such as Shenmen, heart, liver, gallbladder, Jiaogan, Sanjiao and subcortical acupoints (See **Figure 2**). Use a medicine tape attached with Vaccaria seeds on the selected ear acupoints and the Vaccaria seeds stick to the sensitive points. Only an ear auricle is posted each time and the patients can press the Vaccaria seeds on the ear plaster. The force exercised on the ear plaster can be increased little by little and is limited to that the patients can bear and numbness and burning sensation occurs. Press the ear plaster in cycle. Each acupuncture point is pressed for 20 times and each times lasts for 20 min. Two ears are posted alternatively at the interval of 3 days. The patients press it once in each morning and evening. A total of 180 days' pressing treatment is required.

Combination group: Do yoga exercise for 30 minutes in the morning and in the evening once a day, which is same with that in the functional exercise group. After this exercise, they are treated by the auricular plaster therapy for 20 minutes in total of 12 weeks.

Evaluation of curative effect

① Hamilton Anxiety Scale (HAMA). Before treatment and after 12 weeks' treatment, use

Hamilton Anxiety Scale (HAMA) to assess the curative effect respectively. Hamilton Anxiety Scale (HAMA) includes 14 items and each item adopts 5-grade score, which is 0-4 scores. The professional assessment person assesses each item based on communication and observation results. Hamilton Anxiety Scale (HAMA) is mainly used for assessing the severity of patients with anxiety disorder symptoms. In case of the total scores ≥29 points, it is the severe anxiety symptom; in case of the total score ≥21 points, it is the obvious anxiety symptom; in case of the total score ≥14 points, it is the anxiety symptom; in case of the total score ≥7 points, it is the possible anxiety symptom; in case of the total score <7 points, it has no anxiety symptom.

② Assessment of physical and mental functions. Select two test contents (physical and psychological functions) in the comprehensive assessment questionnaire of the life quality (GQOLI-74) and each test content consists of five questions. It adopts 100-point scoring system. The higher scores, the better physical and mental state. Each group of patients is assessed before treatment and after 12 weeks' treatment.

③ Cure standard. According to the patients' HAMA score reduction rate before and after the treatment, assess the curative effect; HAMA score reduction rate (%) = (score before treatment-score after treatment) ÷ score before treatment × 100%. The effect is divided into four levels: in case of HAMD reduction rate ≥75%, the patient can be considered as the cured one; in case of HAMD reduction rate ≥50%, its effect is obvious; in case of HAMD reduction rate ≥25%, it is effective; in case of HAMD reduction rate <25%, it is of no effect. The cured patient of the study is defined as: HAMD reduction rate ≥75% and HAMD score <7 score.

④ Follow-up and interview: Stop the treatment of the cured patients in the 3 groups and then follow up and interview with them for 3 months in order to observe their recurrence rate. Respectively test HAMA scores of the cured patients at the third month after their cure in order to observe whether they suffer from anxiety symptoms.

Statistical analysis

Use SPSS 13.0 version software to process and data, while the obtained data is expressed by ($\bar{x}\pm s$). Then compare the internal group data before and after the treatment and compare the effect of the inter-group after the treatment. Multiple groups are analyzed by the variance. If the total difference shows the statistical significance, Dunnett-t test is used to conduct pairwise comparison. Use *t* test to compare the effect within the group before and after treatment; meanwhile, use X^2 test to compare the count data; in case of $P<0.05$, the difference has the statistical significance.

Results

It can be seen from **Table 1** that no significant difference is shown upon the statistic compliance comparison of the general information of patients in the 3 groups before treatment, HAMA score, physical function score and psychological function score were statistically compared, no s, P>3. After 12 weeks' treatment, it can be seen from **Table 2** data that: ① Comparing the patients in the group before and after treatment, HAMA score, physical function score and psychological function score in the functional exercise group and in the combination group are significantly improved in comparison with those before treatment, $^aP<0.05$; HAMA score and psychological function score in the auricular plaster group are significantly improved compared with those before treatment, $^aP<0.05$, but the psychological function score is not significantly improved. ② After 3 groups of patients are treated, upon inter-group variance analysis of HAMA score, physical function score and psychological function score, the overall difference has statistical significance. In the inter-group comparison, the combination group (after treatment) is compared with the functional exercise group in the same time points, $^bP<0.05$; the combination group (after treatment) is compared with the auricular plaster group in the same time points, $^cP<0.05$. Upon the treatment, the overall improvement effect of the combination group is significantly better than the functional exercise group and the auricular plaster group. ③ It can be known from **Table 3**, the cure rate is 53.33% and the recurrence rate is 25% in the combination group; the cure rate is 33.33% and the recurrence rate is 40% in the functional exercise group; the cure rate is 26.67% and the recurrence rate is 50% in auricular plaster group. In summary, the cure rate is lower and the recurrence rate is higher in the auricular plaster group.

Discussion

Menopause anxiety disorder is usually caused by such three reasons as heredity, physiological function decline and psychological factor. Physiological function decline may become the cause of the disease, but the incidence rate caused by the heredity is low and the individual social psychological factor is the dominant [5, 6]. It can be seen from social psychology of menopausal patients that the body shows aging signs, energy and working ability decrease in the menopausal stage, meanwhile, they face retirement and pressure due to change of surrounding humanities, working and living conditions. Additionally, endocrine function (gonads) decline, caused by the body function recession and physical discomfort, will result in the female menopause mental stress and physical and mental pressure; children work, marriage and relation between mother-in-law and daughter-in-law may also result in the female physical or emotional stress or pressure in this period [7]. In summary, menopause women may become more sensitive to the affairs and problems surrounding them and show psychological bearing capacity in this special period because of social and psychological factors and the special physiological change, as a result, they may be attacked by the disease. Obviously, the cognition process or the thinking attitude plays an extremely important role in the formation of the anxiety symptoms.

In treating the patients with anxiety disorder, the curative effect of the functional rehabilitation exercise has gradually been attached importance in clinical. It is considered that the effect of exercise training on certain diseases is even better than traditional drug treatment. As we all know, sports can enhance the body's regulatory function and have a good effect on improving the patient's mood and increasing communication. For example, it is confirmed [8, 9] by a lot of reports that the exercise therapy can significantly affect the patients' psychological and autonomic nerve function and it can not only improve the regulation function of nervous system, but also can promote nerve regeneration, which is of great significance to improve mental illness. It is also reported that [10, 11] the incidence of anxiety disorder is closely related to social support and whether the people can actively participate in activities and that the collective activity or training can relax the mood and its effect is obvious. Thus, during the rehabilitation training, effect of physical experience and feelings on the anxiety disease should not be overlooked. On this basis, select yoga as a functional rehabilitation training means to provide the functional rehabilitation training for 15 patients in the functional exercise group in this study. Relevant research shows that [12, 13] Yoga itself is a low speed exercise that focuses on regulating the breathing (the breathing is smooth and slow). These characteristics are contrast to the anxiety characteristics. This contrast is beneficial to relieve anxiety and eliminate anxiety adverse effects. In addition, the practice of Yoga not only extends the depth of our breathing, more important, it can give a strong response to the root causes of anxiety. Yoga practice is constantly challenging physical and mental conditions. By the harmony of nature and human, the physical and mental conditions of the practitioners can be improved so as to achieve the effect of purification of the mind and relieve the pressure. As for the patients in the functional exercise group, after 12 weeks' yoga exercise, their HAMA score, physical function score and psychological function score are significantly improved, $^{a}P<0.05$. The clinical cure rate is 33.33%, indicating that the 12 weeks' yoga can significantly improve the physical and mental status of menopausal patients with anxiety disorder indeed.

Traditional Chinese medicine believes that anxiety disorder belongs hysteria and depression syndrome and it is closely related to the disorder of physiological function of hepatobiliary organism. Most of the patients are hurt by seven emotions such as anger, thoughtful, sad and grief, as a result, the disease can be induced by Yin, Yang, Qi and blood disorder of viscera [14, 15]. Related literature points out that [16-18] that twelve meridians are connected to the ear and by pressing Shenmen, heart, liver, gallbladder, Jiaogan, Sanjiao and subcortical acupoints in the auricular, it can regulate Qi-blood, relieve Qi stagnation and ease the spirit; in addition, if patients touch or press the auricular plaster on a daily basis, it can indicate and regulate the anxiety psychological state in a certain extent to encourage them to try to regulate their mentality and keep ataraxia. Vaccaria seeds are used for the auricular plas-

ter on 15 patients for 12 weeks in this study. The results show that although physical function score is not enhanced obviously, psychological function score and HAMA score are improved obviously, $^{a}P<0.05$ and clinical cure rate is 26.67%. It mainly profits from the obvious psychological indication and internal circulation regulated by the auricular plaster therapy on patients. Additionally, it can be seen from the higher recurrence rate (50%) that the therapy is suitable for subtle implicit regulation of the patients. Its short-term effect is often not obvious, it is more suitable for long-term treatment.

To validate the collaborative treatment effect of function rehabilitation training and auricular plaster, this study also provides the combined treatment for 15 patients. After 12 weeks' treatment, it is found that improvement effect in the combination group is significantly better than the other two groups in respect of HAMA score, physical function score and psychological function score. It can be known from the cure rate and the recurrence rate within 3 months after the cure, the cure rate is 53.33% in the combination group, which is significantly higher than the other two groups (33.33% and 26.67%); the recurrence rate is 25% and it is significantly lower than that of the other two groups (40% or 50%). The study indicates that the curative effect of the combination therapy is significantly better than that of single treatment in case of the functional rehabilitation exercise in combination with the auricular plaster and the clinical recurrence rate is significantly lower than that of single treatment. It shows that the combination treatment method presents obvious synergistic effect and the synergistic treatment is more beneficial to improve the curative effect and it is worthy of clinical application and promotion.

Acknowledgements

Science and Technology Department of Henan Province, No. 142400410395.

Disclosure of conflict of interest

None.

Address correspondence to: Fugui Duan, Department of physical education, Jiaozuo Teachers College, Jiaozuo 454000, Henan Province, China. Tel: +86-13782616905; +86-15978782106; E-mail: xrm@hpu.edu.cn; jxwywury@126.com

References

[1] Bryant C, Judd FK, Hickey M. Anxiety during the menopausal transition: a systematic review. J Affect Disord 2012; 139: 141-8.

[2] Bromberger JT, Kravitz HM, Chang Y, Randolph JF Jr, Avis NE, Gold EB, Matthews KA. Does risk for anxiety increase during the menopausal transition? Study of women's health across the nation. Menopause 2013; 20: 488-95.

[3] Kou ST. Efficacy comparison of menopausal irritability between acupuncture and medication: a randomized controlled trial. Zhongguo Zhen Jiu 2014; 34: 455-8.

[4] Song QH, Shen GQ, Xu RM, Zhang QH, Ma M, Guo YH, Zhao XP, Han YB. Effect of Tai Chi exercise on the physical and mental health of the elder patients suffered from anxiety disorder. Int J Physiol Pathophysiol Pharmacol 2014; 6: 55-60.

[5] Brown L, Bryant C, Brown V, Bei B, Judd F. Investigating how menopausal factors and self-compassion shape well-being: An exploratory path analysis. Maturitas 2015; 81: 293-9.

[6] Jafari F, Hadizadeh MH, Zabihi R, Ganji K. Comparison of depression, anxiety, quality of life, vitality and mental health between premenopausal and postmenopausal women. Climacteric 2014; 17: 660-5.

[7] Bryant C, Judd FK, Hickey M. Anxiety during the menopausal transition: a systematic review. J Affect Disord 2012; 139: 141-8.

[8] Hu JP, Guo YH, Wang F, Zhao XP, Zhang QH, Song QH. Exercise improves cognitive function in aging patients. Int J Clin Exp Med 2014; 7: 3144-9.

[9] Song QH, Xu RM, Zhang QH, Ma M, Zhao XP. Relaxation training during chemotherapy for breast cancer improves mental health and lessens adverse events. Int J Clin Exp Med 2013; 6: 979-84.

[10] Bartley CA, Hay M, Bloch MH. Meta-analysis: aerobic exercise for the treatment of anxiety disorders. Prog Neuropsychopharmacol Biol Psychiatry 2013; 45: 34-9.

[11] Arch JJ, Ayers CR. Which treatment worked better for whom? Moderators of group cognitive behavioral therapy versus adapted mindfulness based stress reduction for anxiety disorders. Behav Res Ther 2013; 51: 434-42.

[12] Mullur LM, Khodnapur JP, Bagali S, Aithala M, Dhanakshirur GB. Role of yoga in modifying anxiety level in women. Indian J Physiol Pharmacol 2014; 58: 92-5.

[13] Skowronek IB, Mounsey A, Handler L. Clinical Inquiry: can yoga reduce symptoms of anxiety

and depression? J Fam Pract 2014; 63: 398-407.
[14] Lu DP, Lu GP. A comparison of the clinical effectiveness of various acupuncture points in reducing anxiety to facilitate hypnotic induction. Int J Clin Exp Hypn 2013; 61: 271-81.
[15] Zhou XF, Li Y, Zhu H, Chen LL. Impacts of acupuncture at twelve meridians acupoints on brain waves of patients with general anxiety disorder. Zhongguo Zhen Jiu 2013; 33: 395-8.
[16] Romoli M, Giommi A. Ear acupuncture in psychosomatic medicine: the importance of the Sanjiao (triple heater) area. Acupunct Electrother Res 1993; 18: 185-94.
[17] Black S, Carey E, Webber A, Neish N, Gilbert R. Determining the efficacy of auricular acupuncture for reducing anxiety in patients withdrawing from psychoactive drugs. J Subst Abuse Treat 2011; 41: 279-87.
[18] Mora B, Iannuzzi M, Lang T, Steinlechner B, Barker R, Dobrovits M, Wimmer C, Kober A. Auricular acupressure as a treatment for anxiety before extracorporeal shock wave lithotripsy in the elderly. J Urol 2007; 178: 160.